

Correspondence.

To Prevent Mustiness.

To the Editor of the Scientific American:

In your last issue I find an inquiry how to dispel the mouldy smell from a room. I find by experience that there is nothing equal to indirect heating system to make a room smell pure, either furnace heating or indirect steam heating. The pure dry air it furnishes will make ventilation in every part of the room good.

J. A.

Cairo, Ill., May 4, 1887.

Bellite—A Correction by Prof. Bolton.

To the Editor of the Scientific American:

Permit me to call your attention to an unfortunate typographical error in the SCIENTIFIC AMERICAN for May 14. In the article on bellite (page 303) benzene is unfortunately spelled benzine throughout. The necessity of recognizing the difference between benzene (synonym of benzol) and benzine is well known to you, but I hope you will give your readers the benefit of a correction in an early number.

H. CARRINGTON BOLTON.

Trinity College, Hartford, Conn.

A Shower of Worms.

To the Editor of the Scientific American:

I suppose the fact that small animals are drawn up into the clouds, and fall to the ground during storms, is very well established. I think the best evidence of this fact that I have ever seen was witnessed by my two brothers, with myself, to-day, April 25. As we were walking over a hill in this place where the snow had gone away recently, we came upon a drift by the side of a dry ridge of land, that was some four or five rods in length by two in width at the widest place. While crossing it, I noticed little holes melted in the snow an inch or two deep, at the bottom of which were angle worms. These were scattered over the drift promiscuously, and the worms had been there apparently a day or two, as they had melted their way into the snow an inch or more. From the situation of the drift, it is not possible that they could have been conveyed there by a stream of water, and it is not probable that they would crawl over the snow ten or fifteen feet to the center of the drift, where it was two feet deep, even if they had been in the dry ridge over which the snow drifted. Last Saturday night we were visited with a hard shower, which carried off our snow very fast, and in my opinion deposited the angle worms where we found them on the snow.

DANA J. BUGBEE.

North Pomfret, Vt., April 25, 1887.

Management of Rotary Boilers.

To the Editor of the Scientific American:

Another rotary boiler explosion makes me hurry to give you my idea of what may have something to do with these frightful mysteries. If I want to boil in a rotary boiler stock difficult to subdue, or having something in it I want to kill, I rely on heat more than pressure, and having sixty pounds on generating boiler, I find I can get over 300 degrees in the rotary, without raising the pressure in her above thirty-five pounds. This is done by using the water in the rotary eight inches above the center, so that the steam on going into each end will strike into the water, not over it. When the steam strikes over the water, although the boiler is revolving one turn in two minutes, it keeps over, and don't heat the revolving mass the same. Too much water would give pressure with little heat.

On starting the boiler to revolve, I open an inch valve, the steam divides, and goes into both ends. Three and a half hours gives twenty pounds pressure. I close the valve, so there is three quarters of a turn open. The pressure will be thirty-five in eight hours from start. When rotary is stopped, steam blown off, it is very difficult and dangerous, having to force the man-heads down with lever pressure. I have seen the men have to drop the lever and get away in a hurry, the boiling, foaming mass blowing all over the room. I have let the boiler stand an hour before turning down to drain, and still boiling and foaming, showing the intense heat, and this is my impression: When so hot must be making steam, and if so, would do it very suddenly, and gauges or regulators would be useless, as all the inlets would be stopped with boiling stock. I never could get anything like this heat in any other way than by striking the steam into the water, and using the steam in that way. I boil all my stock this way, but tend the pressure myself, and think I could blow her up if I wanted to.

WM. CHALMERS.

Camden, N. J., May 2, 1887.

Myriads of Cotton Worms.

The number of cotton caterpillars in the Pedee Swamp is so great that, on May 13, a mail train passing over the Pedee River trestle was brought to a standstill by thousands of these worms crushed on the rails, causing the wheels to slip.

Many Items of Interest.

Taking the iron trade over the country at large, says the *Railway Review*, the volume of business has been moderate. Here and there prices have weakened, as, for instance, in the inferior grades of pig iron, old rails, and, under certain conditions, steel rails. Contracts have been placed for steel rails at \$38 at mill, though in non-competitive territory \$40 to \$41 is asked and paid for smaller lots for summer delivery.

Contracts have been closed for about 30,000 tons of foreign rails. Within the past week several thousand tons of bridge iron have been contracted for. Manufacturers of plate iron are about closing business for various kinds of iron and steel plates. The actual market conditions are favorable to strong prices and a steady demand. The furnace capacity is increasing, and for good brands prices are firm. Manufactured iron is rather slow, while nails are more active. Inquiries have been restricted to the actual requirements in most cases. Consumers are not quite as willing to enter into future contracts at this date as they were a few weeks ago. A conservative feeling controls the trade, while prices are not likely to decline, on account of the increased cost to manufacturers, and an advance is improbable.

During the winter, the frost and rains make sad havoc with tin roofs, and in our northern latitude the tinman is full of repair orders in the spring of the year. According to a writer in the *American Artisan* who is a practical roofer, the upright flashings on the north and east sides of the roof are the places most likely to be affected by the elements. To solder these broken seams by the piling on process takes much time and solder, the chances being that next year they will have to be done over again.

To solder seams properly, the old solder should be melted off, the old tin nicely retinned, and strips of tin soldered over the old seam. The edges of the strips can be bent slightly in the locker, so they will not spring up while being soldered.

The brick fire walls are apt to become sadly out of repair, and while it may not be the tinner's business to apply the mortar or cement to their ancient joints, he will be blamed if the water should find its way in under the tin. We therefore suggest that the tinman should inform the owner of the defect, if he is not willing to make the repairs himself.

To make an ink, black at the time of writing, but which shall disappear after a short time, boil nut galls in aqua vitæ, put Roman vitriol and sal ammoniac to it, and when cold dissolve a little gum in it. Writing done with this ink will vanish in twenty-four hours.

Every time we open a SCIENTIFIC AMERICAN, says a contemporary, we wonder how many boys are enjoying its bright, attractive pages, filled with matter as interesting and useful to a bright boy as to his father, for whom it was specially written.

There is no tree that is so sure to grow without any care as the willow. A twig from a branch of the tree stuck into the moist earth, and the labor is completed. An article in the *Königsberger Land und Forstwirtschaftliche Zeitung* recommends the cultivation of willow trees, not only from an economical and industrial point of view, but also for hygienic purposes. They are especially useful where the drinking water is taken from fountains or natural wells, and still more where there are morasses and meadows; for in the vicinity of willow trees water is always clear and pure. Let those who doubt this fact place a piece of willow which has not yet begun to strike, into a bottle of water, and place this with another bottle containing water only in a warm room for eight days; in the first bottle will be found shoots and rootlets in clear water, while the other bottle will contain putrefying water. Holland is covered with willows, and their dam works are made stronger by the network formed by the roots.

The Czar of Russia, at his Winter Palace on the banks of the Neva, St. Petersburg, possesses what is probably the largest permanent installation of electric light ever placed in a single building. The palace itself is illuminated by 12,000 incandescent lamps, while 56 powerful arcs light up the front and the various court yards. The machine room contains eight engines, capable of developing 2,500 horse power; the dynamos, including reserve machines, are 26 in number.

From an abstract from the report of the Commissioners of Education for the years 1884 and 1885, just published, instances are mentioned of the New York Trade Schools, which have been in operation four years, and the Baltimore and Ohio Technological School, established by the Baltimore and Ohio Rail-

road Company for the promotion of a higher course of instruction for the apprentices of the service. Cookery, which is included in the course of elementary instruction in several foreign countries, has thus far found no place in the common schools of the United States.

Work, says one who is accustomed to it, is the true philosopher's stone, whether you handle a pick or a pen, a wheelbarrow or a set of books, digging, ditching, or editing a newspaper.

The *Age of Steel*, believing in electricity as the future motive power for street cars, sums up the advantages of it over horses as follows: 1. Not so much real estate is required for the station as for the stable; nor is the location or the character of the building so much a matter of importance and cost with the former as with the latter. 2. The annual loss in efficiency of say one-fifth of the live stock employed, whereby twenty animals out of every hundred are sold for a song, is avoided. 3. The cost of attendance is very materially reduced. 4. There is no liability to epizooty, costly in respect of both live stock and traffic. 5. There is no likelihood of the motive power "eating its head off" during a strike or while idleness is enforced by any one of a number of causes. 6. The efficiency of the horse in extremely hot or cold weather is at its lowest, though it should be at its highest—which is another and the final point in favor of electricity, if we leave speed out of account.

Some experiments on the resistance offered by a bank of snow to a rifle bullet were made recently at Ottawa, by Col. White, which were most interesting. It was found that the Martini bullets fired into a bank of well packed snow were completely spent after traversing a distance of not more than four feet. Snider bullets, in hard packed snow mixed with ice, but not hard enough to prevent digging into it with a sheet iron shovel, did not penetrate more than about four feet; in perfectly dry snow, packed by natural drift, but capable of being easily crushed in the hand, a bullet penetrated about four feet, and in loose drifted dry snow less than seven feet, though fired from points only 20 or 30 yards distant.

A. Birmingham (Conn.) electrician has a new rat trap, which, it is said, works admirably. He attaches a piece of meat to one pole of a dynamo machine, which can only be reached by the rat by standing on a plate, which serves as the other pole. Report says that no rat has yet got the meat, but many have reached for it, and the inventor is rewarded for his ingenuity with a large collection of dead rats.

Instead of either ordinary inhumation, cremation, or embalming, one Kergovatz proposes to replace these methods by galvanoplasty. After having covered the subject with a layer of plumbago, it is immersed in a bath. Copper being expensive, zinc may be substituted for those who are poor. On the other hand, gold or silver is used for the rich. It has been suggested to prolong the bath, and thus have our friends transformed into statues of natural size.

During the early part of these evenings, when the sky is clear, Jupiter can be seen beaming in the eastern sky and Venus blazing in the west. They are the two brightest of our stellar luminaries, not often seen together to such advantage.

Experiments with Static Electricity.

According to the London *Electrician*, the following interesting experiments were described by Mr. Boys at a recent meeting of the Physical Society:

"If sealing wax or any similar sticky substance be melted in a cup and put upon the conductor of an electrical machine, as in one of the old fashioned experiments, it will begin to throw out threads in an extraordinary way; the fibers are large when the resinous matter is very hot, and each fiber shoots out as a cylinder with remarkable speed, then breaks into beads. These minute beads can be made to patter against a drum head, and make a noise upon it like falling rain. The cup containing the melted wax should be inclined from the operator, and from the electrical machine before the latter is worked, or both will be covered with the most invisible sticky web imaginable. A cup of burnt India rubber tubing so treated sends out almost invisible filaments. Canada balsam is the perfection of a material for producing sticky threads. When a candle is held near a cup throwing out such electrical filaments, they shoot into the flame and sometimes cover the candle; sometimes they will stop as they approach the flame, then turn back and go into the cup from which they started, in consequence of discharging their electricity into the flame. In a few minutes, miles of these sticky threads can be made, and, as they break into beads, the method affords a ready means of powdering such of these substances as are not easily pulverized in any ordinary way."